

Atomnaja Energija, 1, fasc.4, 158-165 (1956) CARD 6 / 8 PA - 1453

measuring total cross sections and cross sections of the nonelastic scattering of neutrons and protons by nuclei, EL-NADI: the applicability of BORN'S approximation to such reactions in which the incident nucleon captures two nucleons of the nucleus, K.A.TER-MARTIOSJAN: the elastic and nonelastic scattering of neutrons and deuterons of high energy by longitudinal semi-transparent nuclei, N.A.PERFILOV: the emission of fragments with $Z > 4$ on the occasion of the destruction of the cores of the emulsion by protons, J. (or G?) FILBER: the interaction of 1 BeV-protons with the nuclei of the photo emulsion, A.M.BALDIN: the problems connected with photonuclear reactions, N.G.SEMASKO: the photoproduction of slow pions on complicated nuclei, A.A.ABRIKOSOV: some quantum-electric effects at high energies, P.PANOVSKIJ (USA): the multiple photoproduction of pions in hydrogen, the photoproduction of myon couples, the direct production of mesons by electrons, and bremsstrahlung at high energies, B.M.PONTEKORVO: the tests undertaken for the discovery of a nuclear interaction connected with the exchange of meson pairs, N.B.DELONE, V.S.ROGANOV and P.WILSON (USA): various problems connected with the photo fission of the deuteron, M.I.ADAMOVIC: the photoproduction of pions on deuterons, A.N.GORBUNOV: experiments concerning the photospallation (photofission ?) of the helium nuclei at high energies. The last session of the department "Elementary Particles" dealt with the problem

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 of new particles. The following topics were dealt with: A.I.ALICHANJAN:
 experiments undertaken with a mass spectrometer in connection with two WILSON
 chambers, V.A.LJUBIMOV: measuring the spectrum of K-mesons in an altitude of
 3200 m, L.SMITH (SMITH): experiments carried out with a cosmotron in the
 course of which cases of a simultaneous production of Λ - and Θ -particles
 were sought, WAN-GAN-~~CAN~~ (Red China): the study of heavy mesons and hyperons
 at an altitude of 3185 m by means of a WILSON chamber, B.S.NEGANOV: the
 possibility of considering a nucleon as a system composed of a hyperon and a
 K-particle, G. STEINBERGER (USA): the production of "strange" particles by
 1,3 MeV-pions in hydrogen, P.PEIERLS (England): "hypernuclei", i.e. nuclear
 systems containing bound hyperons, (N.N.KOLESNIKOV discussed similar problems
 in the theoretical department).

Theoretical Department: In the course of official and inofficial sessions
 (the latter were organized after the Conference had already begun) the follow-
 ing authors dealt with the following subjects: Soviet theoreticians and
 their foreign guests dealt with the works by L.D.LANDAU and his collaborators,
 quantum dynamics and the theory of fields, I.E.TAMM, I.JA.POMERANČUK,
 K.BRJUKNER (BRUECKNER), M.LEVI: the present state of development of the meson
 theory, I.JA.POMERANČUK expressed his opinion that the consistent investigation
 of quantum electrodynamics and of the meson theory leads to the conclusion that
 the renormalized charge of the electron and the renormalized meson charge are
 equal to zero. This would enforce entirely new ideas. I.E.TAMM also stressed

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the necessity of a revision of the bases of the present quantum theory, M.K.POLIVANOV gave a report on the application of the causality condition to problems of scattering, V.JA. FAJNBERG and V.Z.BLANK spoke about a dispersion relation on the occasion of the scattering of nucleons on nucleons, E.S.FRADKIN and B.L.IOFFE on a dispersion relation on the occasion of the scattering of mesons on nucleons, B.L.IOFFE and B.M.STEPANOV on a dispersion relation on the occasion of the photoproduction of pions on nucleons. In the course of the final session Prof. CU (Red China) spoke about a possible model in the theory of elementary particles which contain the theories of FERMI-YANG and HEISENBERG as special cases. The successes achieved by young research scientists were considerable.

INSTITUTION:

BIRYUKOV, V.A.

In the Institute of Nuclear Problems. Nauka i shizn' 23 no.1:
11-14 Ja '56. (MIRA 9:4)

1. Nauchnyy setrudnik Instituta yadernykh problem Akademii nauk
SSSR. (Nuclear physics)

PHASE I BOOK EXPLOITATION

80V/5433

Biryukov, V.A., M.M. Lebedenko, and A.M. Ryzhev

Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)
Moscow, Atomizdat, 1960. 114 p. No. of copies printed not given.

No contributors mentioned.

PURPOSE: This book is intended both for the general reader and the specialist interested in nuclear physics research in the USSR.

COVERAGE: The book describes the organizational structure, facilities, and research program of the Joint Institute of Nuclear Research at Dubna. It was written by 3 members of the Institute and is profusely illustrated with photographs of participating members and visitors, laboratories, and equipment. It is pointed out that scientists from 12 countries are conducting research at the Institute. Mention is made of D.I. Blokhintsev, Corresponding Member of the AS USSR, who reviewed the book, and P. Zol'nikov and V. Shishkin, the Institute's staff photographers. A list of 371 works published by members of the Institute between 1956-1959 completes the book.

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Joint Institute of Nuclear Research

SOV/5433

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AVAILABLE: Library of Congress

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**JA/rn/gmp
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S/089/60/009/01/11/011
B014/B070

AUTHOR: Biryukov, V.
TITLE: Conference on the Theory of Dispersion Relations
PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 1, pp. 71-72


TEXT: In May 1960 a conference was held on the theory of dispersion relations at the Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research), in which more than 70 theoretical physicists took part. The conference was opened by N. N. Bogolyubov. 20 papers were discussed. A. A. Logunov, A. N. Tavkhelidze, I. Todorov, and N. A. Chernikov reported on how the analytical properties of amplitudes can be studied with the help of perturbation theory. V. A. Meshcheryakov, A. V. Yefremov, D. V. Shirokov, and Chzhu Khun-yuan explained the approximation equations for the partial waves of meson-nucleon scattering. K. A. Ter-Martirosyan spoke about the applicability of the relations of double dispersion. V. B. Berestetskiy, I. Ya. Pomeranchuk, and V. N. Gribov gave a report on their work. V. S.

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Conference on the Theory of Dispersion
Relations

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Vladimirov reported on a method by which a commutator can be represented in an integral form. This method is also of practical use in the theory of differential equations. In his concluding remarks, D. I. Blokhintsev showed which problems in this special field remain unsolved and what difficulties may be expected.



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S/089/60/C09/002/011/015
B006/B056

AUTHOR: Biryukov, V.

TITLE: The 8th Session of the Uchenyy soviet Ob"yedinennogo instituta yadernykh issledovaniy (Scientific Council of the Joint Institute of Nuclear Research)

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 2, pp. 146-147

TEXT: From May 24 to May 28, 1960, the 8th session of the Scientific Council was held at the Joint Institute of Nuclear Research (OIIYaI) at Dubna. D. I. Blokhintsev, Director of the Institute, made the participants of the session acquainted with the Five-year Plan (1961 - 1965) of the OIIYaI. Deputy Director Van Gan-ghan gave a report on the cooperation between the OIIYaI and research centers of Bulgaria, Hungary, Eastern Germany, the Chinese People's Republic, Poland, Romania, and Czechoslovakia as well as with Russian institutes. All of them have the proton-synchrotron at their disposal (several possibilities it offers, as e.g. the acceleration of protons to 9 Bev is dealt with in brief). The cooperation between the OIIYaI and the Karl Zeiss Works (Jena) is mentioned; devices for the

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The 8th Session of the Uchenyy sovet
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issledovaniy (Scientific Council of the
Joint Institute of Nuclear Research)

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automatic evaluation of nuclear emulsions are developed. Further, its cooperation with the Nuclear Research Institute in Warsaw and the Institute of Physics of the Czechoslovakian Academy of Sciences is dealt with, as well as with the organization of congresses and other problems of organization. The Scientific Council supported a program of comprehensive cooperation, which had been suggested by a commission of representatives of the Gosudarstvennyy komitet Soveta Ministrov SSSR po ispol'zovaniyu atomnoy energii (State Committee of the Council of Ministers of the USSR for the Utilization of Atomic Energy). A conference was held by the Section for Low Energies, which was organized at the end of the past year. It was attended by the following scientists of its member countries: G. Richter (Eastern Germany), Lin (China), Kim Khen Bon (Korea), G. Nevodnichanskiy (Poland), Shoh. Tsytsayka (Romania) etc., and by the following scientists of the Soviet Union: G. N. Flerov, N. A. Vlasov, V. V. Goncharov, L. V. Groshev, and I. M. Frank (Chairman). Reports are then given on the following lectures: the discovery of the Σ^- hyperon at the Laboratory of High Energies (headed by Van Gan-ghan and V. I. Veksler); on the model of a

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new accelerator, and annular synchrocyclotron, constructed by a group of Soviet and Czechoslovakian scientists under V. A. Petukhov; on new investigations of elementary particles and the nucleonic structure on the proton-synchrotron (V. I. Veksler), and attempts at discovering the D-meson; a possibility of theoretically interpreting the latest experimental data was discussed by D. I. Blokhintsev; new results obtained by investigations of π - π interaction on the synchrocyclotron at the Laboratory of Nuclear Problems (V. M. Sidorov, cross section determination of the reaction

$\pi^+ + \pi^- \rightarrow \pi^0 + \pi^0$); Yu. D. Prokoshkin spoke about work at the Laboratory of Nuclear Problems, especially about that carried out by L. M. Soroko's group who succeeded in measuring the cross section of the reaction

$d + d \rightarrow \pi^0 + \alpha$ ($\sim 2 \cdot 10^{-32} \text{ cm}^2$); this reaction is possible only if the isotopic spin is not conserved. The reaction itself could not be observed. An experimental group under V. P. Dzhelepov found new data concerning rare pion production reactions with 590-Mev neutrons. Yu. D. Prokoshkin spoke about attempts to measure the probability ratio of two pion absorption

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The 8th Session of the Uchenyy soviet
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issledovaniy (Scientific Council of the
Joint Institute of Nuclear Research)

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modes (π^- -absorption by protons) and obtained the hitherto most accurate
value of $P = 1.40 \pm 0.08$. A. Ye. Ignatenko gave a report on investigations
of the nature of paramagnetism of various μ -mesic atoms. ✓

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AUTHOR: Biryukov, V.

TITLE: Conference of the delegates of twelve Governments

PERIODICAL: Atomnaya energiya, v. 10, no. 3, 1961, 285

TEXT: On November 25-26, 1960 the committee of delegates of the Governments of the member countries of Ob'yedinennyy institut yad-rnykh issledovaniy (Joint Institute of Nuclear Research) held a conference at Dubna. The conference was opened by D. I. Blokhintsev, Corresponding Member AS USSR, Director of the Joint Institute of Nuclear Research, who spoke about the results of the Institute's work between 1956 and 1960 and about its future work in the next five years. The respective plans were approved by the delegates. The close cooperation of the USSR, Poland, Czechoslovakia, and Eastern Germany in the construction and installation of old and new laboratories was stressed in a resolution. The plan worked out for 1961-65 provides for the continuation of the Institute's work on the fundamental research of physics of elementary particles (structure of particles, especially nucleons; laws of

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Conference of the delegates of ...

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production and interaction of particles) and of the nucleus. Increase of the beam intensities of the main particle accelerators (synchro-cyclotron and proton synchrotron) and further development of the automatic evaluation of experimental material are the principal problems to be solved by the Institute. V. N. Sergiyenko, managing director of the Institute, reported on the budget of the past and the coming year. The budget and building program for 1961 were approved. In the current year, Professor Heinz Barwich, Director of the Central Nuclear Research Institute of Eastern Germany, and Tudor Tenesescu, Corresponding Member of the Rumanian Academy of Sciences, were appointed deputy directors of the Institute for this period. The deputy directors are appointed periodically and alternately. ✓

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AUTHOR: Biryukov, V.

TITLE: Ninth session of the Scientific Council of the Joint
Institute of Nuclear Research

PERIODICAL: Atomnaya energiya, v. 10, no. 3, 1961, 282-285

TEXT: From November 21 to 24, 1960, the Uchenyy sovet Ob"yedinennogo instituta yadernykh issledovaniy (Scientific Council of the Joint Institute of Nuclear Research) held its ninth session, at which the directors of the laboratories, the deputy directors, and the managing director of the Institute reported on the work carried out in 1960 and submitted the scientific, financial, and building program for the year 1961. Academician V. I. Veksler, director of the Laboratoriya vysokikh energii (High-energy Laboratory) reported on the work of his laboratory. The proton synchrotron, which is now able to accelerate beams of an intensity of 10^{10} protons/pulse, has been improved considerably. A device has been developed for the automatic evaluation of plates with particle tracks. The device is combined with the electronic

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Ninth session of the Scientific ...

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computer "Kiyev" of the Laboratoriya teoreticheskoy fiziki (Laboratory for Theoretical Physics). The prototype of a new accelerator, called annular f-m cyclotron (fazotron), has been tested (cf. Atomnaya energiya, 9, no. 2, p 146). Important experiments were reported on the Rochester Conference (1960, USA). Investigations of inelastic $\pi\pi$ collisions and NN collisions have been performed, and the nucleon distribution in the center-of-mass system has been found to be highly anisotropic. Investigations of the Λ^0 and Σ hyperon production processes have shown that particles with baryonic charge are produced in peripheral collisions at high energies. Elastic NN scattering and the interaction between fast K-mesons and nucleons has also been studied, and the longitudinal polarization of Λ^0 particles produced in πN interactions at 7.8 and 3 Bev has been determined with the help of xenon and propane bubble chambers. This was done for the purpose of verifying the conservation of parity. Polarization has really been detected, but the results have not yet been confirmed. The plan for 1961 provides for further investigations of the conservation of parity in strong interaction, production and decay of strange particles in πN collisions,

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correlation effects in strange-particle production, properties of K_2^0 mesons, nucleon structure, etc. Experiments on weak interaction will also be carried out. V. P. Dzhelepov, Doctor of Physical and Mathematical Sciences, director of the Laboratoriya yadernykh problem (Laboratory for Nuclear Problems), reported on experiments carried out with the f-m synchrotron in 1960, which have already been discussed at Rochester. Among other things, radiationless transitions in heavy muonic atoms (Pb, Bi, Th, U) have been studied together with the Institut teoreticheskoy i eksperimental'noy fiziki AN SSSR (Institute of Theoretical and Experimental Physics of the AS USSR). The nuclear radiation spectra of neutron-deficient isotopes have been investigated. The proton synchrotron and a cloud chamber in the magnetic field were used to study the K_2^0 decay (the results indicated the applicability of the $\Delta T=1/2$ selection rule to decay processes involving leptons). A 200-l bubble chamber and a 64-channel pulse-height analyzer have been developed. Theoretical studies were reported by Academician N. N. Bogolyubov, director of the Laboratoriya teoreticheskoy fiziki (Laboratory of Theoretical Physics). In this connection, the investigations of dispersion relations and

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spectral representations are of particular importance (Atomnaya energiya, 2, no. 1, p. 71), as well as calculations in connection with accelerators, central and peripheral πN and NN collisions, and high-energy physics of the neutrino. This laboratory will be equipped with two new electronic computers of the type "Kiyev" (in addition to the computer "Ural"). A library of standard programs is provided for these computers. I. M. Frank, Corresponding Member AS USSR, director of the Laboratoriya neytronnoy fiziki (Laboratory for Neutron Physics) spoke about the construction of a pulsed reactor, G. N. Flerov, Corresponding Member AS USSR, director of the Laboratoriya yadernykh reaktsiy (Laboratory for Nuclear Reactions) about the construction of an accelerator for multiply-charged ions, and Van Gan-cha, Vice President of the Institute, about the international relations of the Institute and the results of irradiation of nuclear emulsions by the proton synchrotron. Professor V. Petrzhilkaya and I. V. Chuvilo, director of the High-energy Laboratory are mentioned in this connection. A number of international conferences (Rochester, Weimar, Copenhagen, Prague, Vienna) were attended by several co-workers of the Institute. Professor E. Dzhakov, Vice Director of the Institute,

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reported on the activities of the Institute's co-workers from the Communist bloc (except the USSR). A meeting of a section for low-energy nuclear physics was held simultaneously. The delegates decided to hold the next meetings at Cracow (April-May, 1961) and Dubna (one in May, one in June, and one in October). [Abstracter's note: The Joint Institute of Nuclear Research (OIIYaI) is the Soviet-bloc equivalent to CERN.] There are 3 Soviet-bloc references.

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BIRYUKOV, V.

Tenth session of the Scientific Council of the Joint Institute of
Nuclear Research. Atom. energ. 11 no.3:261 S.'61. (MIRA 14:9)
(Nuclear research--Congresses)

9.2120 (also 1001, 1155);
21.1100

S/057/61/031/004/006/018
B125/B205

AUTHORS: Biryukov, V. A. and Danilov, V. I.

TITLE: Magnetic field of a rectangular, current-carrying coil

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 4, 1961, 428-435

TEXT: A study has been made of some special cases of exact formulas for the coefficients of the magnetic field of a current-carrying, rectangular coil. These exact formulas are obtained by summation of the magnetic fields of elementary currents satisfying the Biot-Savart law. For both theoretical analyses and practical calculations it is advisable to have an exact solution to the problem of a coil having several layers of finite dimensions. The first part presents the calculation of the field of a current-carrying turn. The turn, through which a current i flows and which has an infinitely thin cross section in the plane $z=0$ of a rectangular coordinate system, is assumed to be such that the axis Oz passes through its center. If the radius vector \vec{R} points from an element of the turn $d\vec{l}$ to the point of observation (x_0, y_0, z_0) , the magnetic field

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generated by this element is given by $d\vec{H} = \frac{1}{4\pi R^3} [\vec{dl} \times \vec{R}]$ according to the Biot-Savart law. The equation

$$\left. \begin{aligned} dH_x &= \frac{i}{4\pi R^3} (dl_y R_z), \\ dH_y &= \frac{i}{4\pi R^3} (-dl_x R_z), \\ dH_z &= \frac{i}{4\pi R^3} (dl_x R_y - dl_y R_x), \end{aligned} \right\} \quad (1a)$$

holds for the components of the field along the axis. Only the field produced by the sides 1 and 3 has a component along the Ox axis, i.e.,

$$\begin{aligned} H_x &= \frac{is_0}{4\pi} \left\{ \int_{-a}^a \frac{dy}{[(x_0-l)^2 + (y_0-y)^2 + z_0^2]^{3/2}} + \int_{-a}^a \frac{(-dy)}{[(x_0+l)^2 + (y_0-y)^2 + z_0^2]^{3/2}} \right\} = \\ &= -\frac{is_0}{4\pi} \left\{ \left[\frac{\beta}{(a^2 + z_0^2) \sqrt{a^2 + \beta^2 + z_0^2}} \right]_{\beta_1 = y_0-l}^{\beta_2 = y_0-a} - \left[\frac{\beta}{(a^2 + z_0^2) \sqrt{a^2 + \beta^2 + z_0^2}} \right]_{\beta_1 = y_0+l}^{\beta_2 = y_0+a} \right\} \quad (2) \end{aligned}$$

The field generated by currents 2 and 4 has a component along the Oy axis, i.e.,

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$$H_z = -\frac{Is_0}{4\pi} \left\{ \int_{-l}^l \frac{(-dx)}{[(x_0-x)^2 + (y_0-a)^2 + z_0^2]^{3/2}} + \right. \\ \left. + \int_{-l}^l \frac{dx}{[(x_0-x)^2 + (y_0+a)^2 + z_0^2]^{3/2}} \right\} = \quad (3)$$

$$= -\frac{Is_0}{4\pi} \left\{ \left[\frac{a}{(\beta^2 + z_0^2) \sqrt{a^2 + \beta^2 + z_0^2}} \right]_{\beta=x_0-l}^{\beta=x_0+l} \right\}_{\beta=y_0-a}^{\beta=y_0+a} \quad (3)$$

The z-component of the magnetic field will be the sum of the summands of all four sides of the turn:

$$H_z = \frac{Is_0}{4\pi} \left\{ -(x_0-l) \int_{-a}^a \frac{dy}{[(x_0-l)^2 + (y_0-y)^2 + z_0^2]^{3/2}} + \right. \\ \left. + (y_0-a) \int_{-l}^l \frac{(-dx)}{[(x_0-x)^2 + (y_0-a)^2 + z_0^2]^{3/2}} - \right. \\ \left. - (x_0+l) \int_{-a}^a \frac{(-dy)}{[(x_0+l)^2 + (y_0-y)^2 + z_0^2]^{3/2}} + \right. \quad (4)$$

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$$+ (y_0 + a) \int_{-1}^1 \frac{dx}{[(x_0 - x)^2 + (y_0 + a)^2 + z_0^2]^{3/2}} =$$

$$= \frac{i}{4\pi} \left\{ \left[\frac{a\beta}{(\beta^2 + z_0^2) \sqrt{a^2 + \beta^2 + z_0^2}} + \frac{a\alpha}{(\alpha^2 + z_0^2) \sqrt{a^2 + \beta^2 + z_0^2}} \right]_{\alpha_1, \alpha_2, -1}^{\alpha_2, \alpha_1, -1} \right\}_{\beta_1, \beta_2, +1}^{\beta_2, \beta_1, +1} \quad (4)$$

Here, and henceforward, α and β indicate the limits of the integrals

determined; thus, $\left\{ [f(\alpha, \beta)]_{\alpha_1}^{\alpha_2} \right\}_{\beta_1}^{\beta_2} = f(\alpha_2, \beta_2) + f(\alpha_1, \beta_1) - f(\alpha_2, \beta_1) - f(\alpha_1, \beta_2)$

is valid. The constant in (2) - (4) and in the later formulas corresponds to the MKSM system chosen here. Thus, the field strength is expressed in a/cm, the current i in a, and all linear dimensions in cm. The magnetic field of a rectangular coil of infinitely thin cross section can be expressed as the sum of magnetic fields generated by similar turns. The winding of the coil is supposed to be continuous. The current $i = jdz$ flows through a coil element of height dz ; here, $j = iW/2h$ stands for the linear current density, where i is the current flowing through the winding, W the number of turns, and $2h$ the height of the coil. The plane xOy traverses the center of the coil. Then, one finds the components of

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the magnetic field of a coil having the dimensions $2l \times 2a$ by integration of (2) - (4) over the height of the coil:

$$H_z = -\frac{I}{4\pi} \left[\left(\int_{-a}^a \frac{\beta (x_0 - s) ds}{[a^2 + (x_0 - s)^2] \sqrt{a^2 + \beta^2 + (x_0 - s)^2}} \right) \right]_{\beta_1}^{\beta_2} =$$

$$= -\frac{I}{4\pi} \left\{ \left[\left(\operatorname{ar sh} \frac{\beta}{\sqrt{a^2 + \gamma^2}} \right) \right]_{\beta_1}^{\beta_2} \right\}_{\beta_1}^{\beta_2} \quad (5)$$

$$H_y = -\frac{I}{4\pi} \left\{ \left[\left(\operatorname{ar sh} \frac{a}{\sqrt{\beta^2 + \gamma^2}} \right) \right]_{\beta_1}^{\beta_2} \right\}_{\beta_1}^{\beta_2} \quad (6)$$

$$H_x = \frac{I}{4\pi} \left[\left(\int_{-a}^a \frac{s \beta ds}{[\beta^2 + (x_0 - s)^2] \sqrt{a^2 + \beta^2 + (x_0 - s)^2}} + \right. \right.$$

$$\left. + \int_{-a}^a \frac{a \beta ds}{[a^2 + (x_0 - s)^2] \sqrt{a^2 + \beta^2 + (x_0 - s)^2}} \right) \right]_{\beta_1}^{\beta_2} =$$

$$= -\frac{I}{4\pi} \left\{ \left[\left(\operatorname{arctg} \frac{a\gamma}{\beta \sqrt{a^2 + \beta^2 + \gamma^2}} + \operatorname{arctg} \frac{\beta\gamma}{a \sqrt{a^2 + \beta^2 + \gamma^2}} \right) \right]_{\beta_1}^{\beta_2} \right\}_{\beta_1}^{\beta_2} \quad (6a)$$

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Here and henceforward, the field strength is written down in the form of (6a). After summing up the arc tangents one obtains

$$H_z = -\frac{I}{4\pi} \left\{ \left[\left(\operatorname{arctg} \frac{aB}{\eta \sqrt{a^2 + \eta^2 + \eta'^2}} \right) \right]_{\eta_1=a_0+l}^{\eta_2=a_0-d} \right\} \quad (7)$$

instead of (6a). The field of a coil having an infinitely small height and many turns is given by

$$H_z = \frac{I}{4\pi} \left\{ \left[\operatorname{arctg} \frac{k_1' \psi - z_0^2}{z_0 \sqrt{(k_1' + \psi')^2 + \psi'^2 + z_0^2}} + \right. \right. \\ \left. \left. + \operatorname{arctg} \frac{k_2' \psi - z_0^2}{z_0 \sqrt{(k_2' + \psi')^2 + \psi'^2 + z_0^2}} \right]_{\psi_1=z_0-l}^{\psi_2=z_0-l-d} - \right. \\ \left. - \left[\operatorname{arctg} \frac{k_3' \psi - z_0^2}{z_0 \sqrt{(k_3' + \psi')^2 + \psi'^2 + z_0^2}} + \right. \right. \\ \left. \left. + \operatorname{arctg} \frac{k_4' \psi - z_0^2}{z_0 \sqrt{(k_4' + \psi')^2 + \psi'^2 + z_0^2}} \right]_{\psi_1=z_0+l}^{\psi_2=z_0+l+d} \right\} \quad (9)$$

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where d denotes the thickness of the coil. The symbols

$$\left. \begin{aligned} k'_1 &= [(y_0 - a) - (x_0 - l)] = -k_1, \\ k'_2 &= [(y_0 + a) - (x_0 + l)] = -k_2, \\ k'_3 &= -[(y_0 + a) + (x_0 - l)] = k_3, \\ k'_4 &= -[(y_0 - a) + (x_0 + l)] = k_4, \end{aligned} \right\} \quad (8)$$

are used here. With the symbol $f_{xy}(k, \varphi) = \arctan \frac{k\varphi - z_0}{z_0 \sqrt{(k+\varphi)^2 + \varphi^2 + z_0^2}}$, the y-component of the field is given by

$$H_y = \frac{I}{4\pi} \left\{ [f_{xy}(k_1, \varphi) + f_{xy}(k_4, \varphi)]_{\varphi_1=y_0-a-d}^{\varphi_1=y_0-a+d} - [f_{xy}(k_2, \varphi) + f_{xy}(k_3, \varphi)]_{\varphi_1=y_0+a}^{\varphi_1=y_0+a+d} \right\}, \quad (10)$$

где для краткости обозначено

$$f_{xy}(k, \varphi) = \arctg \frac{k\varphi - z_0^2}{z_0 \sqrt{(k+\varphi)^2 + \varphi^2 + z_0^2}}.$$

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B125/B205

and the z-component by

$$H_z = \frac{1}{4\pi} \left\{ [f_s(k_1, \varphi) + f_s(k_1, \varphi)]_{\varphi_1=\varphi_0-d}^{\varphi_1=\varphi_0+d} - [f_s(k_2, \psi) + f_s(k_2, \psi)]_{\psi_1=\psi_0}^{\psi_1=\psi_0+a+d} + \right. \\ \left. + [f_s(k'_1, \varphi') + f_s(k'_1, \varphi')]_{\varphi'_1=\varphi'_0-l}^{\varphi'_1=\varphi'_0+l+d} - \right. \\ \left. - [f_s(k'_2, \psi') + f_s(k'_2, \psi')]_{\psi'_1=\psi'_0+l}^{\psi'_1=\psi'_0+l+d} \right\}. \quad (11)$$

The examples calculated here comprise many practical applications. The calculation of the field strength of a coil having finite dimensions, which is necessary in spite of all approximation methods, is discussed in the fourth part. The magnetic field of a rectangular coil having the internal dimensions l and a , a height $2h$, and a winding of thickness d can be represented as the sum of fields of coils having an infinitely small cross section and a height $2h$ (Part II), on the one hand, and as the sum of field strengths of coils having an infinitely small height and a thickness d (Part III). The same result is obtained in both cases. The

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components of a coil of height 2h are given by

$$= - \left\{ \eta \operatorname{arctg} \frac{k\varphi - \eta^2}{\eta \sqrt{(k+\varphi)^2 + \varphi^2 + \eta^2}} - \varphi \operatorname{arsh} \frac{k+\varphi}{\sqrt{\varphi^2 + \eta^2}} - \frac{k}{\sqrt{2}} \operatorname{arsh} \frac{k+2\varphi}{\sqrt{k^2 + 2\eta^2}} \right\}_{\eta=\eta_0-h}^{\eta=\eta_0+h} = - (F_{xy}(k, \varphi, \eta))_{\eta_1}^{\eta_2}. \quad (11a)$$

wherefrom it follows by integration that

$$H_y = - \frac{j^0}{4\pi} \left\{ [F_{xy}(k'_1, \varphi', \eta) + F_{xy}(k'_2, \varphi', \eta)]_{\eta_1=\eta_0-l}^{\eta_2=\eta_0-l+d} - [F_{xy}(k'_2, \varphi', \eta) + F_{xy}(k'_1, \varphi', \eta)]_{\eta_1=\eta_0+l}^{\eta_2=\eta_0+l+d} \right\}_{\eta_1=\eta_0+h}^{\eta_2=\eta_0-h}, \quad (12)$$

$$H_y = - \frac{j^0}{4\pi} \left\{ [F_{xy}(k_1, \varphi, \eta) + F_{xy}(k_2, \varphi, \eta)]_{\eta_1=\eta_0-h}^{\eta_2=\eta_0-h+d} - [F_{xy}(k_2, \varphi, \eta) + F_{xy}(k_1, \varphi, \eta)]_{\eta_1=\eta_0+h}^{\eta_2=\eta_0+h+d} \right\}_{\eta_1=\eta_0+h}^{\eta_2=\eta_0-h}, \quad (13)$$

F_{xy} being defined by (11a). The parameters k are defined by Eq. (8). The Card 9/11

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component H_z is given by

$$-\int_{x_1+h}^{x_2-h} \left(\operatorname{arsh} \frac{|k+\varphi|}{\sqrt{\varphi^2+\eta^2}} - \frac{1}{\sqrt{2}} \operatorname{arsh} \frac{k+2\varphi}{\sqrt{k^2+2\eta^2}} \right) d\eta =$$

$$= \left\{ -\eta \operatorname{arsh} \frac{k+\varphi}{\sqrt{\varphi^2+\eta^2}} + \varphi \operatorname{arctg} \frac{(k+\varphi)\eta}{\varphi\sqrt{(k+\varphi)^2+\varphi^2+\eta^2}} - \right.$$

$$- \frac{k}{2} \operatorname{arsh} \frac{\eta}{\sqrt{(k+\varphi)^2+\varphi^2}} + \frac{\eta}{\sqrt{2}} \operatorname{arsh} \frac{k+2\varphi}{\sqrt{k^2+2\eta^2}} -$$

$$\left. - \frac{k}{2} \operatorname{arctg} \frac{(k+2\varphi)\eta}{k\sqrt{(k+\varphi)^2+\varphi^2+\eta^2}} \right\}_{\eta=x_1+h}^{\eta=x_2-h} \quad (13a)$$

which leads finally to

$$H_z = \frac{f}{4\pi} \left\{ [f_s^0(k_1, \varphi, \eta) + f_s^0(k_1, \varphi, \eta)]_{\varphi_1=\varphi_2-h}^{\varphi_1=\varphi_2+d} - \right.$$

$$- [f_s^0(k_2, \psi, \eta) + f_s^0(k_2, \psi, \eta)]_{\psi_1=\psi_2-h}^{\psi_1=\psi_2+d} +$$

$$+ [f_{s1}(k'_1, \varphi', \eta) + f_{s1}(k'_1, \varphi', \eta)]_{\varphi'_1=\varphi'_2-h}^{\varphi'_1=\varphi'_2+d} -$$

$$\left. - [f_{s1}(k'_2, \psi', \eta) + f_{s1}(k'_2, \psi', \eta)]_{\psi'_1=\psi'_2-h}^{\psi'_1=\psi'_2+d} \right\} \quad (15)$$

Card 10/11

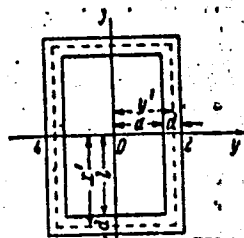
Magnetic field of a...

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B125/B205

The difference between the fields of real coils and those determined from the formulas derived here is determined by the uniformity of distribution of the current density over the cross section of the winding, i.e., by the degree of constancy of j and j^* . There are 2 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy Moskva
(Joint Institute of Nuclear Research, Moscow)

SUBMITTED: June 14, 1960



Card 11/14

BIRYUKOV, V.

Eleventh session of the Scientific Council of the United
Institute of Nuclear Research. Atom. energ. 12 no.4:339-
341 Ap '62.

(MIRA 15:3)

(Nuclear research)

BIRYUKOV, V.

Meeting of the Committee of Authorized Representatives of
Member Countries in the United Institute of Nuclear Research.
Atom. energ. 12 no.4:341 Ap '62. (MIRA 15:3)
(Atomic energy research)

BIRYUKOV, V.; LEBEDEV, R.

Fourteenth Session of the Scientific Council of the United
Institute of Nuclear Research. Atom. energ. 15 no.6:530-532
D '63. (MIRA 17:1)

BIRYUKOV, V.; LEBEDEV, R.

Fifteenth Session of the Scientific Council of the United
Institute of Nuclear Research. Atom.energ. 16 no. 5:459-462
My '64. (MIRA 17:5)

BIRYUKOV, V.A.; KIM, L.T.; RAPOPORT, E.Z.

Principles of construction of the V-2 apparatus for multiplexing
rural communication lines. Elektrosviaz' 19 no.4:38-47 Ap '65.
(MIRA 18:6)

BIRYUKOV, V.A., kand. tekhn. nauk; KHVOSHCHINSKIY, M.L., inzh.

Practical testing of high-temperature lumber kilns made by
the State Institute for Design and Planning Scientific Research
Institute. Der. prom. 13 no.12:22-1, D '64 (MIRA 18:2)

LOPAY, Semen Densiovich, inzh.; REPREV, Andrey Ivanovich, kand. tekhn. nauk; KONDRASHOV, Dmitriy Sergeyevich, inzh.; BIRYUKOV, V.D., inzh., retsenzent; NALICHAYEV, V.N., inzh., retsenzent; SURODEYEV, V.P., inzh., red.; KHITROVA, N.A., tekhn. red.

[Over-all mechanization of ballasting operations] Kompleksnaia mekhanizatsia ballastirovochnykh rabot. Moskva, Transzheldorizdat, 1962. 175 p. (MIRA 15:12)
(Ballast (Railroads)) (Railroads--Equipment and supplies)

BYKOVSKIY, V.S.; KANEVSKIY, A.G.; PETROV, A.F.; BIRYUKOV, V.D., inzh.,
retsenzent; DOBSHITS, M.L., inzh., red.

[Dispatcher control in railroad construction] Dispetcherskoe
upravlenie zheleznodorozhnym stroitel'stvom. Moskva, Trans-
zheldorizdat, 1963. 95 p. (MIRA 16:5)

(Railroads--Construction)

(Railroads--Design and communication systems)

YUDIN, I.D., kand. khim. nauk; KRUGLOV, O.V. [deceased]; MAKEROVA, M.I.;
BIRYUKOV, V.F.

Certain dependence of the heat of combustion of gas on the
rate of the flow in the gasification channel. Trudy
VNIIPodzemgaza no.12:19-27 '64.
(MIRA 18:9)

BIRYUKOV, V.F.; POBIN, I.P., kand.khim.nauk; MAKAROVA, N.I.

Methods of analyzing the technological indices at the "Podzenga" station in Imsichansk. Trudy VNNIPodzengaza no.13:6-10 '65.

(MIRA 18:8)

1. Imsichanskaya stantsiya "Podzenga".

KOSTROV, M.F.; BIRYUKOV, V.G.; SIROTINSKIY, L.I.; KISLOV, A.N.; KOZHUKHOV, V.K.;
AKOPYAN, A.A.; MEL'KONOV, A.M.; LARIONOV, V.P.

Professor G.V. Butkevich. Fiftieth anniversary of his birth. Elektrichestvo
no.10:92 0 '53. (MLRA 6:10)

(Butkevich, Georgii Vladimirovich, 1903-)

POTIN, V.P.; AKOPYAN, A.A., red.; ANDRIANOV, K.A., red.; BIRYUKOV, V.G., glavnyy red.; BUTKEVICH, Yu.V., zamestitel' glavnogo red.; GRANOVSKIY, V.L., red.; KALITVYANSKIY, V.I., red.; KLYARFEL'D, B.N., red.; KRAPIVIN, V.K., red.; TIMOFEEV, P.V., red.; PASTOVSKIY, V.G., red.; TSEYROV, Ye.M., red.; SHEMAYEV, A.M., red.; DEMKOV, Ye.D., red.; FRIDKIN, A.M., tekhn. red.

[Voltage increase on long a.c. lines during nonsymmetric short circuits to ground] Povysheniya napriazhenii v dlinnykh liniakh peremennogo toka pri nesimmetrichnykh korotkikh zamykaniyakh na zemliu. Moskva, Gos.energ.izd-vo, 1958. 223 p. (Moscow. Vsesoiuznyi elektrotekhnicheskii institut. Trudy, no.64) (MIRA 12:2)
(Electric lines) (Short circuits)

BIRYUKOV, V.G.

Studying electric discharges in gases. Trudy VNI no.63:5-6
'58. (MIRA 11:11)

1. Zamestitel' direktora po nauchnoy chasti Vsesoyuznogo ordena
Lenina elektrotekhnicheskogo instituta im. V.I. Lenina.
(Electric discharges through gases)

SOKOLOV, Nikolay Nikolayevich; ANDRIANOV, K.A.,red.; AKOPYAN, A.A.,red.;
~~BIRYUKOV, V.G.,glavnyy red.~~; BUTKEVICH, G.V.,red.; GRANOVSKIY, V.L.,red.;
GERTSENBERG, G.R.,red.; ZABYRINA, K.I.,red.; KALITVYANSKIY, V.I.,red.;
KLYARFEL'D, B.N.; SAKOVICH, A.A.; TIMOFYEV, P.V.; PASTOVSKIY, V.G.;
TSEYROV, Ye.M.; FRIDMAN, A.Ya.; SHIMAYEV, A.M.; TIMOKHINA, V.I.,red.

[Methods for the synthesis of organopolysiloxanes] Metody
sintezy poliorganosiloksanov. Moskva, Gos.energ. izd-vo. 1959.
198 p. (Moscow. Vsesoiuznyi elektrotekhnicheskii institut.
Trudy, no.66) (MIRA 12:5)

(Siloxanes)

8(0)

AUTHORS:

Chilikin, M. G., Kostrov, M. F., Venikov, V. A., Biryukov, V. G.,
Glazunov, A. A., Butkevich, Yu. V., Razevig, D. V., and Others

SOV/105-59-6-22/28

TITLE:

Leonid Ivanovich Sirotinskiy (Leonid Ivanovich Sirotinskiy)
On His 80-th Birthday (K 80-letiyu so dnya rozhdeniya)

PERIODICAL:

Elektrichestvo, 1959, Nr 6, pp 91-92 (USSR)

ABSTRACT:

The scientist and pedagogist, Doctor of Technical Sciences Leonid Ivanovich Sirotinskiy was born in April 1879. His career in the field of science and teaching began, when in 1907 he participated in the establishment of the first junior engineers college in Russia (at present Moskovskiy energeticheskiy tekhnikum, Moscow Polytechnic of Power Engineering), where afterwards he worked for more than 25 years. In 1917 he began to work at the Moskovskoye vyssheye tekhnicheskoye uchilishche (Moscow Technical University) and later on in the Moskovskiy energeticheskiy institut (Moscow Institute of Power Engineering). He introduced courses on electrical illumination, electric traction, overvoltages and overvoltage protection at the MVTU and MEI. Later on he mainly worked in the field of high-voltage engineering. He organized the chair of high-voltage engineering

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Leonid Ivanovich Sirotinskiy. On His 80-th Birthday

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at the MEI and established a laboratory with this chair. In 1921 in collaboration with K. A. Krug he established the Gosudarstvennyy eksperimental'nyy institut (State Experimental Institute), which later on was transformed into the Vsesoyuznyy elektrotekhnicheskiy institut imeni Lenina (All-Union Institute of Electrical Engineering imeni Lenin). Sirotinskiy was the first head of the department of high voltages of the VEI. He still is in close contact with the VEI. He was a member of the Tsentral'nyy elektrotekhnicheskiy sovet (Central Council for Electrical Engineering). In this function and as a consultant to the Glavenergo he collaborated in giving his expert opinion on the power stations on the Dnepr and the Svir', and on the electric grids in the Donbass. He participated in the discussion on the projects of the 400 kv a.c. line and of the d.c. line Stalingrad hydroelectric power station - Donbass. For many years he was the chairman of the committee for the elaboration of specifications for overvoltage protection. He was a member of the Presidium and deputy chairman of the Elektrotekhnicheskoye obshchestvo (Electrotechnical Society), chairman of the section for power stations at the MONITOE, and for many years he was chairman of the

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Léonid Ivanovich Sirotinskiy. On His 80-th Birthday

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Nauchno-tekhnicheskoye obshchestvo MEI (Scientific and Technical Society of the MEI). He is at present still a member of the Scientific Councils of the MEI and VEI, member of the Technical Council of the Ministerstvo stroitel'stva elektrostantsiy (Ministry for the Construction of Power Stations). His three-volume textbook "High-Voltage Engineering" is well known. At present he is engaged in re-editing this book. He has been awarded two Lenin Prizes, is a member of the Order of the Red Banner of Labor, of the order "Medal of Distinction" and of several medals. In 1942 the title of a Merited Scientist and Engineer of the RSFSR was conferred upon him, and in 1950 he was awarded the Stalin Prize for his work on valve arresters. There is 1 figure.

Card 3/3

CHILIKIN, M.G., doktor tekhn.nauk, prof.; BIRYUKOV, V.G., kand.tekhn.nauk
BARDYBAKHIN, I.P., inzh.; LAZAREV, S.S., inzh.

Review of the sections on electric machines and transformers,
electrical apparatus, electrification of industry, and electrifica-
tion of transportation and agriculture, of the "Referativnyi
Zhurnal: Elektrotehnika," Elektrichestvo no. 11:95-96 N '60.

(MIRA 13:12)

(Electric engineering--Periodicals)

AKOPYAN, A.A.; BIRYUKOV, V.G.; BUTKEVICH, G.V.; KOZHUKHOV, V.K.;
KRAYZ, A.G.; NAYASHKOV, I.S.; SIROTINSKIY, L.I.; SAPOZHNIKOV, A.V.;
SYROMYATNIKOV, I.A.; RABINOVICH, S.I.

A.V. Panov; on his 60th birthday. Elektrichestvo no.5:92
My '63. (MIRA 16:7)

(Panov, Aleksei Vasil'evich, 1903-)

ARKHIPOV, V.N.; BIRYUKOV, V.G.; BRONSHTEYN, A.M.; DROZDOV, N.G.; KRESTOV,
N.I.; NAYASHKOV, I.S.; PETROV, G.N.; SIROTINSKIY, L.I.; CHILIKIN,
M.G.

Professor G.V. Butkevich; on his 60th birthday. Elektrichestvo
no.10:92-93 0 '63. (MIRA 16:11)

ALEKSENKO, G.V.; BIRYUKOV, V.G.; BORISENKO, N.I.; BORUSHKO, V.S.; KOVALEV, N.N.;
KOSTENKO, M.P.; OBOLENSKIY, N.A.; PETROV, G.N.; ROZANOV, A.A.;
SKIDANENKO, I.T.; TIMOFEYEV, P.V.; CHILIKIN, M.G.; SHEREMET'YEVSKIY, N.N.

Professor Andronik Gevondovich ~~Iosif~~ian, 1905- ; on his 60th
birthday. Elektrichestvo no.9:88 S '65.

(MIRA 18:10)

L 22432-66

ACC NR: AP6013618

SOURCE CODE: UR/0105/65/000/011/0086/0087

AUTHOR: Birvukov, V. G.; Britchuk, V. V.; Kozhukhov, V. K.; Krayz, A. G.;
Nayashkov, I. S.; Nazarevskiy, M. I.; Panov, A. V.; Petrov, G. N.; Rabinovich, S. I.;
Sapozhnikov, A. V.

ORG: none

TITLE: E. A. Man'kin, on his 60th birthday

SOURCE: Elektrichestvo, no. 11, 1965, 86-87

TOPIC TAGS: electric engineering personnel, synchrotron

ABSTRACT: Emmanuil Abramovich MAN'KIN, who after 35 years of scientific-engineering work ranks as one of the senior workers in the transformer-building field, was 60 years old on 28 May 1965. After graduating in 1927 from the electrical machine building institute in Moscow he became an engineer of the Moscow transformer factory (presently Moskovskiy elektrozavod; Moscow Electric Factory). He constructed and headed until 1934 the transformer testing station. During the 1935-1942 period he was head of the bureau for the design of special transformers, and during these years carried out numerous theoretical investigations concerning electromagnetic transformer calculations. His methods for the calculation of transformer leakage earned

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UDC: 621.314.21

L 22432-66

ACC NR: AP6013618

him the degree of candidate of engineering sciences. Between 1942 and 1947 he was deputy head of the engineering department of the factory, and since 1947, while heading the Bureau of Electromagnetic Design of the Spetsial'nyy konstruktorskiy byuro (Special Construction Bureau) he has been one of the main designers of the world's first 280 MeV synchrotron. From 1955 to 1958 E. A. MAN'KIN headed the group of designers working on the 400 kV transformer equipment of the Volgograd-Donbass power line. Since 1960 he has been head of the transformer laboratory of the Vsesoyuznyy elektrotekhnicheskii institut (All-Union Electrotechnical Institute) im. Lenin. In the same year he obtained the degree of Doctor of Engineering Sciences for his works "Electromagnetic design of transformers, reactors, and charged particle accelerators." In the course of his engineering and research activity he published more than 30 papers. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 09, 20 / SUBM DATE: none

Card 2/2 BLS

L 22732-66 EWP(k)/EWP(h)/EWP(d)/EWP(l)/EWP(v)

ACC NR: AP6013621

SOURCE CODE: UR/0105/65/000/009/0088/0088

AUTHOR: Aleksenko, G. V.; Biryukov, V. G.; Borisenko, N. I.; Borushko, V. S.;
Kovalev, N. N.; Kostenko, M. P.; Obolenskiy, N. A.; Petrov, G. N.; Rozanov, A. A.;
Skidanenko, I. T.; Timofeyev, P. V.; Chilikin, M. G.; Sheremet'yevskiy, N. N. 81

ORG: none 79

TITLE: Honoring the 60th birthday of Professor Andronik Gevondovich Iosif'yan B

SOURCE: Elektrichestvo, no. 9, 1965, 88

TOPIC TAGS: academic personnel, scientific personnel, automation, electric engineering, servosystem, automatic control

ABSTRACT: 21 July 1965 was the 60th birthday of the eminent Soviet scientist in the field of electrical mechanics and automation, Dr. Techn. Sci., Professor, Member of the AS Armenian SSR, Hero of Socialist Labor, Laureate of the State Prize, A. G. Iosif'yan. His scientific contributions are numerous. During 1931-1934 he developed the theory of the combined synchronous control circuit with AC commutator generator. Subsequently, he invented the contactless selsyn. He was the first Soviet scientist to publish studies of thyatron-based servosystems for the control of electrical machinery. During 1940-1945 he made a major contribution to the theory of electrical machinery and automatic control by publishing studies on the general theory of the elec-

Cord 1/2

UDC: 621.3:65.011.56 2

22157-00

ACC NR: AP6013621

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tromechanical amplifier (amplidyne) and power-driven synchronous servosystems. In his 35 years of scientific activity A. G. Iosif'yan has published more than 60 studies on many problems of electrical mechanics and automatic control and has been the author of 24 inventions. A. G. Iosif'yan is the founder and director of the All-Union Order of Labor Red Banner Scientific Research Institute of Electromechanics, and it was on his initiative that branches of this institute have been established in Leningrad, Tomsk, Yerevan, Frunze, Iskra, and Kudinovo. Between 1950 and 1955 he held the elective office of Vice President of the Armenian Academy of Sciences, and since 1955 he has been Editor-in-Chief of the journal Elektrotehnika (Electrical Engineering). He is also the bearer of many other honors. Among other things, he was elected delegate to the 22nd Congress of the CPSU. Orig. art. has: 1 figure. [JPRS]

SUB CODE: 09 / SUBM DATE: none

Card 2/2 *Id*

BIRYUKOV, V.I.; MYSHKIN, G.L.

Spray drying of yeast suspensions. Trudy Sib.tekh.inst. no.23:65-
66. '59.

(MIRA 14:4

(Yeast)

BORDE, I.I.; BIRYUKOV, V.I.

Spray drying of fodder yeasts. Gidroliz.i lesokhim.prom.
13 no.6:10-11 '60. (MIRA 13:9)

1. Sibirskiy tekhnologicheskii institut.
(Yeast--Drying)

GAVRA, T.D.; BIRYUKOV, V.I.

Frequency stability of a low-frequency oscillator equipped with
junction triodes. Poluprov.prib. 1 ikh prim. no.3:253-270
' 58. (MIRA 12:4)

(Oscillators, Transistor)

BIRYUKOV, V.I., inzh.; KROKHA, V.A., inzh.

Determination of stresses in flat coining. [Nauch. trudy] ENIKMASHa
3:117-126 '60. (MIRA 14:1)
(Sheet-metal work) (Strains and stresses)

BIRYUKOV, V.I., inzh.

Possibility of improving the quality of ingot butts during their
cutting with shears. [Nauch. trudy] ENIKMASHa 7:35-44 '63.

(MIRA 16:7)

(Rolling mills—Equipment and supplies)
(Steel ingots)

BIRYUKOV, V.I., inzh.

Precision forging of gear wheel blanks in preparation for cog
knurling. [Nauch. trudy] ENIKMASHa 7:45-54 '63. (MIRA 16:7)

(Gearing) (Forging)

BIRYUKOV, V.I.

Process of dewatering paper sheet in a camera-type suction couch
roll. Bumagodel.mash. no.6:110-123 '58. (MIRA 13:8)
(Papermaking machinery)

ABRAMOVICH, A.D.; BIRYUKOV, V.I., inzh.; KUGUSHEV, I.D., kand. tekhn. nauk

Method for selecting a vacuum pump for papermaking machines. Bum.
prom. 33 no. 6:20-23 Je '58. (MIRA 11:7)

1. Glavnyy inzhener Pervey Leningradskoy bumashnoy fabriki (for
Abramovich).

(Papermaking machinery)
(Vacuum pumps)

BIRYUKOV, V. I. Cand Tech Sci -- (diss) "Study of the process of dehydration
of paper panels on the ^{grid part} ~~making~~ of paper-making machines by means of circumfluence
and under vacuum." Len, 1959. 11 pp (Min of Higher and Secondary Specialized
Education, ^{RSFSR. LAM} Order of Lenin Forestry Engineering Acad,
Education in S. M. Kirov), 250 copies (KL, # 50-59, 126)

KUGUSHEV, I.D.; BIRYUKOV, V.I.; ZHUKOV, G.G.

Design of the suction system of couch rolls. Bumagodel.mash.
no.7:103-108 '59. (MIRA 13:5)
(Papermaking machinery)

BIRYUKOV, V.I.

Process of dewatering paper sheet in a suction couch roll by
the EGDA method. Trudy Sib.tekh.inst. no.23:14-32 '59.
(MIRA 14.4)

(Papermaking machinery)

KUGUSHEV, I.D.; DASHKIN, M.D.; BIRYUKOV, V.I.

Applying the electrolytic method to the measurement of paper
sheet moisture. Trudy Sib.tekh.inst. no.23:56-62 '59.
(MIRA 14:4)

(Paper)

BIRYUKOV, V.I.

Dewatering of paper sheets. Trudy Sib.tekh.inst. no.23:67-68 '59.
(MIRA 144)

(Papermaking machinery)

KUGUSHEV, I.D.; BIRYUKOV, V.I.

Improved drying of paper on a couch roll. Bum. prom. 36 no.7:
8-9 J1 '61. (MIRA 14:9)

1. Leningradskiy politekhnicheskii institut im. M.I.Kalinina (for
Kugushov). 2. Sibirskiy lesotekhnicheskii institut (for Biryukov).
(Paper)

GALKIN, B.I.; BIRYUKOV, V.I.; KREYTER, V.M.; KULICHIKHIN, S.N.;
ORLOVA, Ye.V.; POMERANTSEV, V.V.; RUSETSKAYA, G.G.;
YARMOLOVICH, N.V.; MAKEYEV, V.I., red. izd-va; BYKOVA,
V.V., tekhn. red.

[Prospecting for stockwork deposits of nonferrous and rare
metal ores] Razvedka shtokverkovykh mestorozhdenii tsvyetnykh i
redkikh metallov. [By] B.I.Galkin i dr. Moskva, Gosgeoltekh-
izdat, 1962. 233 p. (MIRA 16:6)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut mine-
ral'nogo syr'ya.

(Prospecting)

L 17062-63 EPE(c)/EWP(q)/EWT(m)/BDS S/062/63/000/004/006/022
AFFTC Pr-4 RM/WW/JD
AUTHOR: Minsker, K.S., Biryukov, V.I., Grayevskiy, A.I., and Razuvayev, G.A. 63

TITLE: Interaction Between Aluminum Alkyls and Hydrogen

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye khimicheskikh nauk, no. 4, 1963, 637-640 27

TEXT: The interaction of triethylaluminum with hydrogen on Ziegler type heterogenic complex catalysts was studied. In the gaseous phase of the reaction ethane is accumulated with the simultaneous formation of diethylaluminum hydride. A connection is shown for interaction of triethylaluminum and hydrogen with the effect of molecular hydrogen on the stereospecific polymerization of olefine under the effect of Ziegler catalysts. An analogy was noted in the activation mechanism of olefin and hydrogen molecules on the Ziegler complex catalysts. There are 2 figures.

SUBMITTED: June 19, 1962

Card 1/1

Dissertation: "Investigation of the Technology of Automatic Multiple Cutting of Lock Threads." Cand Tech Sci, Moscow Order of Labor Red Banner Petroleum Inst imeni Academician I. M. Gubkin, 11 May 54. Vechernyaya Moskva, Moscow, 3 May 54.

SO: SUM 284, 26 Nov 1954

BIRYUKOV, V.I.

ZHIGACH, K.F., professor, otvetstvennyy redaktor; MURAV'YEV, I.M., professor, redaktor; TIKHOMIROV, A.A., kandidat ekonomicheskikh nauk, redaktor; YEGOROV, V.I., kandidat ekonomicheskikh nauk, redaktor; CHARYGIN, M.M., professor, redaktor; DUNAYEV, F.F., professor, redaktor; NAMEKIN, N.S., dotsent, redaktor; BIRYUKOV, V.I., dotsent, redaktor; YEGOROV, A.F., dotsent, redaktor; CHARNYY, I.A., professor, redaktor; CHERNOZHUKOV, P.I., professor, redaktor; KUZMAK, Ye.M., professor, redaktor; DOKHNOV, V.N., professor, redaktor; PANCHENKOV, G.M., professor, redaktor; ALMAZOV, N.A., dotsent, redaktor; TAGIYEV, B.I., redaktor; GURNVICH, redaktor; ZHIGACH, K.F., redaktor; DAYEV, G.A., vedushchiy redaktor; GENNAD'YEVA, I.M., tekhnicheskiiy redaktor

[The tenth scientific and technical conference, 1955] Desiataya nauchno-tekhnicheskaya konferentsiya, 1955 g. Leningrad, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, Leningradskoe otd-nie, 1956. 167 p. (MIRA 9:7)

1. Moscow. Moskovskiy neftyanoy institut. Nauchnoye studencheskoye obshchestvo
(Petroleum engineering) (Petroleum geology)

BIRYUKOV, V.I., kandidat tekhnicheskikh nauk. SOLOMONOVICH, Ye.D., kandidat tekhnicheskikh nauk.

Three-component instrument for measuring cutting forces. Trudy MNI
no.17:179-183 '56. (MLRA 9:10)
(Metal cutting) (Measuring instruments)

MARKHASIN, E.L., dotsent, kandidat tekhnicheskikh nauk.; BIRYUKOV, V.I.,
kandidat tekhnicheskikh nauk.

Cutting lock threads. Trudy MNI no.17:187-206 '56.
(Screw cutting)

(MIRA 9:10)

BIRYUKOV, V. I.,

Biryukov, V. I., and E. L. Markhasin.

"Method of The Transverse Feed of a Cutter in Automatic Cycle Cutting"

"Change in the Geometry of a Thread Cutter During Large Thread Cutting"

"Effect of the Copying Drum Setting on the Accuracy of the Thread Pitch in Automatic-cycle Thread Cutting"

Problems of Petroleum Production and Petroleum Engineering, Moscow, Neftyanoy institut, Gostoptekhnizdat, 1957, 393pp. (Trudy vyp. 20)
This book is a collection of articles written by professors and faculty members of the Petroleum Inst. im I. M. Gubkin.

V.I.
KUZMAK, Ye.M., prof. doktor tekhn. nauk, red.; TARAN, V.D., prof.; doktor tekhn. nauk, red.; ZHIGACH, K.F., prof., red.; MURAV'YEV, I.M., prof., red.; TIKHOMIROV, A.A., kand. ekon. nauk, red.; YEGOROV, V.I., kand. ekon. nauk, red.; CHARYGIN, M.M., prof., red.; DUNAYEV, P.P., prof., red.; CHERNOZHUKOV, N.I., prof., red.; CHARNYY, I.A., prof., red.; PANCHENKOV, G.M., prof., red.; DAKHNOV, V.N., prof., NAMETKIN, N.S., doktor khim. nauk, red.; ALMAZOV, N.A., dots., VINOGRADOV, V.N., kand. tekhn. nauk, red.; BIRYUKOV, V.I., kand. tekhn. nauk, red.; TAGIYEV, E.I., red.; GUREVICH, V.M., red.; GOR'KOVA, A.A., ved. red.; FEDOTOVA, I.G., tekhn. red.

[Proceedings of the conference of technical schools on the problems of new equipment for the petroleum industry] Meshvuzovskoe soveshchanie po voprosam novoi tekhniki v neftianoi promyshlennosti. 1958. materialy... Moskva, Gos. nauchno-tekhn. izd-vo neft. i gornotoplivnoi lit-ry. Vol. 3. [Manufacture of petroleum industry equipment] Neftianoe mashinostroenie. 1958. 222 p. (MIRA 11:11)
(Petroleum industry--Equipment and supplies)

BIRYUKOV, V. I.

CHERNOSZHUKOV, N.I., prof., doktor tekhn.nauk, red.; ZHIGACH, K.F., prof.,
otvetstvennyy red.; MURAV'YEV, I.M., prof., red.; TIKHOMIROV, A.A.,
kand.ekon.nauk, red.; YEGOROV, V.I., kand.ekon.nauk, red.; CHARYGIN,
M.M., prof., red.; DUNAYEV, F.F., prof., red.; KUZMAK, Ye.M., prof.,
red.; CHARNYY, I.A., prof., red.; PANCHENKOV, G.M., prof., red.;
DAKHNOV, V.N., prof., red.; NAMETKIN, N.S., doktor khim.nauk, red.;
ALMAZOV, N.A., dots., red.; VINOGRADOV, V.N., kand.tekhn.nauk, red.;
BIRYUKOV, V.I., kand.tekhn.nauk, red.; TAGIYEV, E.I., red.; GUREVICH,
V.H., red.; ZAMARAYEVA, K.M., vedushchiy red.; MUKHINA, E.A., tekhn.
red.

[Materials of the Interuniversity Conference on Problems of New
Practices in the Petroleum Industry] Materialy mezhvuzovskogo
soveshchaniya po voprosam novoy tekhniki v neftyanoy promyshlen-
nosti. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi
lit-ry. Vol.2. [Petroleum refining] Pererabotka nefti. 1958. 289 p.
(MIRA 11:6)

1. Mezhvuzovskoye soveshchaniye po voprosam novoy tekhniki v
neftyanoy promyshlennosti. 1956.
(Petroleum--Refining)

CHERNOZHUKOV, N.I., prof., doktor tekhn.nauk, red.; ZHIGACH, K.F., prof., red.; MURAV'YEV, I.M., prof., red.; TIKHOMIROV, A.A., kand.ekon.nauk, red.; YEGOROV, V.I., kand.ekon.nauk, red.; CHARYGIN, M.M., prof., red.; DUMAYEV, P.P., prof., red.; KUZMAK, Ye.M., prof., red.; CHARNYY, I.A., prof., red.; PANCHENKOV, G.W., prof., red.; DAKHNOV, V.N., prof., red.; NAMETKIN, N.S., doktor khim.nauk, red.; ALMAZOV, N.A., dotsent, red.; VINOGRADOV, V.N., kand.tekhn.nauk, red.; BIRYUKOV, V.I., kand.tekhn.nauk, red.; TAGIYEV, E.I., red.; GUREVICH, V.M., red.; ZAMARAYEVA, K.M., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Petroleum refining; articles] Pererabotka nefi; materialy. Moskva, Gos.nauchno-tekhn.isd-ve nefi. i gorne-teplivnoi lit-ry. Vol.2. 1958. 289 p. (MIRA 12:1)

1. Meshvuzovskoye soveshchaniye po voprosam novej tekhniki v neftyanoy promyshlennosti, Moscow, 1956. 2. Moskovskiy neftyanoy institut (for Cherneshukov, Panchenkov).

(Petroleum--Refining)

ZHIGACH, K.F., prof., red.; MURAV'YEV, I.M., prof. doktor tekhn.nauk, red.;
 TIKHOMIROV, A.A., kand.ekon.nauk, red.; YEGOROV, V.I., kand.ekon.
 nauk, red.; CHARYGIN, M.M., prof., red.; DUNAYEV, F.F., prof., red.;
 CHERNOZHUKOV, N.I., prof., red.; KUZMAK, Ye.M., prof., red.;
 CHARNYY, I.A., prof., red.; PANCHENKOV, G.M., prof., red.; DAKHNOV,
 V.N., prof. doktor geolog-mineralogicheskikh nauk, red.; NAMEKIN,
 N.S., doktor khim.nauk, red.; AIMAZOV, N.A., dots., red.; VINOGRADOV,
 V.N., kand.tekhn.nauk, red.; BIRYUKOV, V.I., kand.tekhn.nauk, red.;
 TAGIYEV, M.I., red.; GURVICH, V.M., red.; DOBRYNINA, N.P., vedushchiy
 red.; MUKHINA, E.A., tekhn.red.

[Proceedings of an interschool conference on problems of new techniques
 in the petroleum industry] Materialy Meshvuzovskogo soveshchaniya
 po voprosam novoy tekhniki v neftyanoy promyshlennosti. Moskva, Gos.
 nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry. Vo.1.

[Prospecting and exploitation of oil and gas fields] Razvedka i
 razrabotka neftiannykh i gazovykh mestorozhdenii. 1958. 311 p.

(MIRA 11:4)

1. Meshvuzovskoye soveshchaniye po voprosam novoy tekhniki v
 neftyanoy promyshlennosti.

(Petroleum engineering) (Gas, Natural--Geology)

ZHIGACH, K.F., prof., otv.red.; MURAV'YEV, I.M., prof., red.; TIKHOMIROV, A.A., kand.ekonom.nauk; red.; VINOGRADOV, V.N., kand.tekhn.nauk, red.; SIDORENKO, N.V., red.; BRENTS, A.D., red.; CHARYGIN, M.M., prof., red.; DUNAYEV, F.F., prof., red.; CHARNYY, I.A., prof., red.; CHERNOZHUKOV, N.I., prof., red.; KUZMAK, Ye.M., prof., red.; DAKHNOV, V.N., prof., red.; PANCHENKOV, G.M., prof., red.; NAMSTKIN, N.S., prof., red.; TAGIYEV, E.I., prof., red.; BIRYUKOV, V.I., kand.tekhn.nauk, red.; YEGOROV, V.I., kand.tekhn.nauk, red.; ALMAZOV, N.A., dotsent, red.; GUREVICH, V.M., red.; ISAYEVA, V.V., vedushchiy red.; POLOSINA, A.S., tekhn.red.

[Development of the gas industry of the U.S.S.R.; from the proceedings of the Interuniversity Scientific Conference on the Problems of the Gas Industry] Meshvuzovskaya nauchnaya konferentsiya po voprosam gazovoi promyshlennosti. Razvitiye gazovoi promyshlennosti SSSR; materialy. Moskva, Gos.nauchno-tekhn.isd-vo nef. i gorno-toplivnoi lit-ry, 1960. 405 p. (MIRA 13:11)

1. Meshvuzovskaya nauchnaya konferentsiya po voprosam gazovoy promyshlennosti. 2. Glavgaz SSSR (for Brents). 3. Moskovskiy institut neftekhimicheskoi i gazovoi promyshlennosti im. akad.Gubkina (for Charygin, Charnyy).

(Gas industry)

The serpentinization of peridotites is probably intimately
connected with the action of the mantle plume.

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BIRYUKOV, V.I.

Measuring the thickness and distribution of sampling channels
in mines. *Izv.vys.ucheb,sav.; tsvet.met.* 2 no.4:3-15 '59.
(MIRA 13:1)

1. Moskovskiy institut tsvetnykh metallov i solota. Kafedra
metodiki poiskov i rasvedok.
(Ores--Sampling and estimation)

BIRYUKOV, V.I.

Principal methods of prospecting for mineral deposits. Izv.
vys.ucheb.sav.; geol.i razv. 2 no.5:107-113 My '59.
(MIRA 12:12)

1. Krasnoyarskiy institut tsvetnykh metallov i zolota. Kafedra
poiskov i razvedki.
(Prospecting)

VOL'PSON, F.I.; LUKIN, L.I.; DYUKOV, A.I.; KUSHNAREV, I.P.; PEK, A.V.;
 RYBALOV, B.L.; SONYUSHEKIN, Ye.P.; KHOROSHILOV, L.V.; CHERNYSHEV,
 V.F.; BIRYUKOV, V.I.; GARMASH, A.A.; DRUZHININ, A.V.; KARAMYAN,
 K.A.; KUZNETSOV, K.P.; LOZOVSKIY, V.I.; MALINOVSKIY, Ye.P.;
 NEVSKIY, V.A.; PAVLOV, N.V.; ROMENSON, B.M.; SAMONOV, I.Z.;
 SIDORENKO, A.V. [deceased]; SOPKO, P.F.; CHEGLOKOV, S.V.; YUDIN,
 B.A.; KREYTER, V.M., doktor geologo-mineral.nauk; retsenzent;
 KOTLYAR, V.N., doktor geologo-mineral.nauk, retsenzent; GRUSHEVOY,
 V.G.; doktor geologo-mineral.nauk, retsenzent; NAKOVNIK, N.I., doktor
 geologo-mineral.nauk, retsenzent; KUREK, N.N., doktor geologo-mineral.
 nauk, retsenzent; LIIGEN'KIY, S.N., retsenzent; SHATALOV, Ye.T., doktor
 geologo-mineral.nauk, red.; KRISTAL'NIY, B.V., red.; SERGEYEVA, N.A.,
 red.izd-va; GUROVA, O.A., tekhn.red.

[Basic problems and methods of studying structures of ore provinces
 (Continued on next card)]

VOL'FSON, F.I.---(continued) Card 2.

and deposits] Osnovnye voprosy i metody izucheniia struktur rudnykh polei i mestorozhdenii. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po geol. i okhrane neдр, 1960. 623 p.

(MIRA 13:11)

1. Akademiya nauk SSSR. Institut geologii rudnykh mestorozhdeniy, petrografii, mineralogii i geokhimii. 2. Moskovskiy institut tsvetnykh metallov i zolota (for Dyukov, Biryukov, Druzhinin, Kuznetsov). 3. Institut mineralogii, geokhimii i kristalloghimii redkikh elementov AN SSSR (for Germash). 4. Akademiya nauk Armyanskoy SSR (for Karamyan). 5. Balezoloto (for Sidorenko). 6. Institut geologii rudnykh mestorozhdeniy, petrografii, mineralogii i geokhimii AN SSSR (for Malinovskiy, Nevskiy, Pavlov, Chernyshev). 7. Moskovskiy geologorazvedochnyy institut im. S.Ordzhonikidze (for Ronenson). 8. Vsesoyuznyy nauchno-issledovatel'skiy institut mineral'nogo syr'ya (for Samonov). 9. Voronezhskiy universitet (for Sopko). 10. Kol'skiy filial AN SSSR (for Yudin).

(Ore deposits)

KREYTER, V.M.; BIRYUKOV, V.I.

"Principles of mineral prospecting" by K.I.Krolivetskii. Reviewed
by V.M.Kreiter, V.I.Biriukov. Razved. i okh. nedr 26 no. 1:61-
63 Ja '60. (MIRA 13:12)

1. Vsesoyuznyy institut mineral'nogo syr'ya.
(Prospecting) (Krolivetskii, K.I.)

BIRYUKOV, V.I.

Classification of systems of prospecting for solid minerals.
Geol.rud.mestorozh. no.1:99-121 Ja-F '62. (MIRA 15:2)

1. Institut tsvetnykh metallov, Moskva.
(Prospecting)
(Ore deposits)

BELEVTSSEV, Yakov Nikolayevich; TAKHTUYEV, Gleb Vasil'yevich; GOROSHNIKOV,
Boris Ivanovich; BIRYUKOV, V.I., red.; OVCHINNIKOVA, S.V., red.
izd-va; GUROVA, O.A., tekhn. red.

[Mining geology of iron ore deposits] Rudnichnaia geologiya na
zhelezorudnykh mestorozhdeniyakh. Moskva, Gosgeoltekhizdat,
1962. 233 p. (MIRA 16:2)

(Iron ores)

BIRYUKOV, V.I.; SOLOV'YEV, A.T.

Types of lead-zinc mineralization in the Korean People's Democratic
Republic. Trudy VSEGEI 100:94-108 '63. (MIRA 17:3)

BIRYUKOV, V.I.

Index of the interruption forms of mineral deposits. 'zv. vys.
ucheb. zav.; geol. i razv. 6 no.12:88-104 D '63 (MIRA 18:2)

1. Vsesoyuznyy institut mineral'nogo syr'ya.

BULAKH, Vladimir Leont'yevich; SOLOMENTSEV, Nikolay Afanas'yevich; CHEKMAROV, Viktor Aleksandrovich; BIRYUKOV, V.K., redaktor; SOLOVEYCHIK, A.A., tekhnicheskii redaktor.

[Principles of hydrology and agricultural improvement] Osnovy gidrologii i sel'skokhoziaistvennykh melioratsii. Leningrad, Gidrometeorologicheskoe izd-vo, 1955. 311 p. (MLRA 9:6)
(Hydrology)

BIRYUKOV, V.K.

PETROVSKIY, Nikolay Viktorovich; GITIS, V.Yu. professor, retsentsent;
BIRYUKOV, V.K., redaktor; PETERSON, M.M., tekhnicheskiy
redaktor.

[Increasing power of marine diesels by pressure feed]
Povyshenie moshchnosti sudovykh dizeloi nadduyom. Leningrad,
Izd-vo "Morskoi transport," 1955. 178 p. (MLRA 9:1)
(Diesel engines)

BIRYUKOV, Vasilii Kuz'mich; AKIMOV, P.P., redaktor; VOLCHOV, K.M., tekhnicheskii redaktor

[Marine internal combustion engines] Sudovye dvigateli vnutrennego sgoraniia. Leningrad, Izd-vo "Rechnoi transport," Leningradskoe otd-nie, 1955. 408 p. (MLRA 8:7)
(Marine engines)

SAMOYLOV, Yuriy Sergeyevich; BIRYUKOV, V.K., spets. red.; SANDLER, N.V., red.;
KOTLYAKOVA, O.I., ~~tekhn. red.~~

["Gants-Andrashik" 8 ChB21,6/31,0 marine engines] Sudovye dvigateli
8 ChB21,6/31,0 "Gants-Andrashik." Leningrad, Izd-vo "Morskoi transport,"
1958. 167 p. (MIRA 11:7)

(Marine diesel engines)

BIRYUKOV, Vasilii Kuz'mich, KUZOVLEV, V.A., retsenzent, AKIMOV, P.P., red.;
VOIZHOK, K.M., tekhn.red.

[Internal combustion marine engines] Sudovye dvigateli vnutrennego
sgoraniia. Izd. 3. Leningrad, Izd-vo "Rechnoi transport," Leningrad.
otd-nis, 1958. 360 p. (MIRA 11:9)
(Marine engines)

BIRYUKOV, Vasilii Kuz'mich; LOGINOV, A.A., red.; VOLCHOK, K.M., tekhn.
red.

[Marine internal combustion engines] Sudovye dvigateli vnutren-
nego sgoraniia. Leningrad, Izd-vo "Rechnoi transport," 1961. 344 p.
(MIRA 15:7)

(Marine engines)

STASKEVICH, Nikolay Lukich; MAYZEL'S, Petr Borisovich;
VIGDORCHIK, Dariy Yakovlevich; BIRYUKOV, V.K., nauchn.
red.; FEDOTOVA, M.I., ved. red.

[Handbook on liquefied hydrocarbon gases] Spravochnik po
szhizhenrym uglevodorodnym gazam. Leningrad, Nedra, 1964.
515 p. (MIRA 17:7)